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| EXAMINER | |
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| LEE, GENE W | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/594,226 | INOKUCHI ET AL. | |
| | Examiner | Art Unit | |
| | Gene W. Lee | 2629 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/25/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Signal Processing System for a Pointing Input Device.

### *Claim Objections*

2. **Claims 5 and 7 are objected to** because of the following informalities: The term "between" should be replaced by "among". Appropriate correction is required.

3. **Claims 4, 5, and 7 are objected to** because of the following informalities: The term "circularly" is not idiomatic English as used. It appears to be intended to convey the same meaning as "alternately" in other claims but with regards to more than two signals. It is suggested that "circularly" be changed to "alternately" or the like. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-2 are rejected** under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Publication No. 2003/0085874 (Burry).

6. Regarding claim 1, Burry teaches a signal processing system for processing signals outputted from a pointing device (see Abstract), the pointing device comprising a detection means capable of outputting respective detection signals outputted by operating an operation console in plus and minus directions, along an x-axis and/or y-axis thereof, respectively (Fig. 7 at 100), in such a way as to identify whether an operation is in either the plus direction or the minus direction, along the x-axis and/or y-axis, respectively, or in both the plus and minus directions, along the x-axis and/or y-axis, respectively (Fig. 7 at 100), a first outputting means for fetching the detection signals outputted by the operation in either the plus direction or the minus direction, along the x-axis and/or y-axis, respectively, from the detection means (Fig. 7 at 108 or 110), and a second outputting means for fetching the detection signals outputted by the operations in both the plus and minus directions, along the x-axis and/or y-axis, respectively, wherein the signal processing system processes the output signal of the first output means as a shifting operation signal of a pointer, and processes an output signal of the second output means as a clicking operation signal of the pointer (Fig. 7 at 112).

7. Regarding claim 2, Burry teaches a signal processing system according to claim 1, wherein said detection means comprises a first resistance element which is changed in resistance value in response to a load applied to the device by operating the operation console in the plus direction along the x-axis and/or y-axis (Fig. 7 at R1), and a second resistance element which is serially connected to the first resistance element and changed in resistance value in response to a load applied to the device by

operating the operation console in the minus direction along the x-axis and/or y-axis (Fig. 7 at R2), wherein a power supply is fed to one end of the serially connected circuits (Fig. 7 at 104), and a terminal connected to a node between the resistance elements forms the first output means (Fig. 7 at 110), while a terminal connected to the end of a power supply side of the serially connected circuits forms the second output means (Fig. 7 at 112).

8. **Claim 1 is rejected** in the alternative under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,486,871 (Marten '871).

9. Regarding claim 1, Marten '871 teaches a signal processing system for processing signals outputted from a pointing device (Abstract), the pointing device comprising a detection means capable of outputting respective detection signals outputted by operating an operation console in plus and minus directions, along an x-axis and/or y-axis thereof, respectively (Abstract, Fig. 3; col. 2 lines 50-62), in such a way as to identify whether an operation is in either the plus direction or the minus direction, along the x-axis and/or y-axis, respectively, or in both the plus and minus directions, along the x-axis and/or y-axis, respectively (Fig. 3; col. 2 lines 63-65), a first outputting means for fetching the detection signals outputted by the operation in either the plus direction or the minus direction, along the x-axis and/or y-axis, respectively, from the detection means (Fig. 1 at 7), and a second outputting means for fetching the detection signals outputted by the operations in both the plus and minus directions, along the x-axis and/or y-axis, respectively, wherein the signal processing system processes the output signal of the first output means as a shifting operation signal of a

pointer, and processes an output signal of the second output means as a clicking operation signal of the pointer (Fig. 1 at 7).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. **Claims 3-5 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Marten '871 as applied to claim 1 above, and further in view of U.S. Patent No. 6,429,850 (Marten '850).

13. Regarding claim 3, Marten '871 teaches a signal processing system according to Claim 1, further comprising a switching circuit for switching over between the shifting operation signal in the x-axis direction and the shifting operation signal in the y-axis

direction to thereby output the switched shifting operation signal (Fig. 1 at 12), an operational amplifier for amplifying the shifting operation signal in the x-axis direction and the shifting operation signal in the y-axis direction, respectively, outputted from the first switching circuit (Fig. 1 at 14), the operational amplifier for amplifying the clicking operation signal and a controller for controlling the switching circuit (Fig. 1 at 14), wherein the controller executes control of switchover such that the first switching circuit outputs the shifting operation signal in the x-axis direction and the shifting operation signal in the y-axis direction alternately for every predetermined period (Fig. 1 at microcontroller). Marten '871 does not explicitly teach a separate operational amplifier for amplifying the clicking signal, nor a second switching circuit for switching over between the output signals of the first and second amplifiers to thereby output the switched output signal, nor where the controller controls the second switching circuit to output the first and second amplifiers alternately. However, Marten '850 does teach the use of amplifiers to amplify axis signals individually (Fig. 1). Marten '871 teaches an arrangement that minimizes the switches and amplifier to one apiece, but other arrangements utilizing more switches and amplifiers are clearly possible that output the same results, including the arrangement of claim 3. Forming such variations in arrangements is a matter of basic circuit logic and design that would be fundamental for one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871 and Marten '850 to produce the device of claim 3.

14. Regarding claim 4, Marten '871 teaches a signal processing system according to Claim 1, further comprising a switching circuit for switching over between the shifting operation signal in the x-axis direction and the shifting operation signal in the y-axis direction, and the clicking operation signal to thereby output the switched signal (Fig. 1 at 12), an amplifier for amplifying the shifting operation signal in the x-axis direction, the shifting operation signal in the y-axis direction, and the clicking operation signal, respectively outputted from the switching circuit (Fig. 1 at 14), and a controller for controlling the switching circuit, wherein the controller executes control of switchover between the shifting operation signals and the clicking operation signal so that the switching circuit outputs the shifting operation signal in the x-axis direction, the shifting operation signal in the y-axis direction and the clicking operation signal alternately for every predetermined period (Fig. 1 at microcontroller). Marten '871 does not explicitly teach the use of plural switching circuits and amplifiers, where of course the microcontroller would then control all of these. However, Marten '850 does teach the use of amplifiers to amplify axis signals individually (Fig. 1). Marten '871 teaches an arrangement that minimizes the switches and amplifier to one apiece, but other arrangements utilizing more switches and amplifiers are clearly possible that output the same results, including the arrangement of claim 4. Forming such permutations in arrangements is a matter of basic circuit logic and design that would be fundamental for one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871 and Marten '850 to produce the device of claim 4.

15. Regarding claim 5, Marten '871 teaches a signal processing system according to claim 1, further comprising an amplifier for amplifying the shifting operation signal in the x-axis direction, for amplifying the shifting operation signal in the y-axis direction, and for amplifying the clicking operation signal (Fig. 1 at 14), a switching circuit for switching over among output signals to thereby output the switched signal (Fig. 1 at 12), and a controller for controlling the switching circuit, wherein the controller executes control of switchover among the output signals so that the switching circuits output the shifting operation signal in the x-axis direction, the shifting operation signal in the y-axis direction and the clicking operation signal circularly for every predetermined period (Fig. 1 at microcontroller). Marten '871 does not explicitly teach the use of three amplifiers, one for each signal, wherein switching circuits switch among outputs of the three amplifiers. However, However, Marten '850 does teach the use of amplifiers to amplify axis signals individually (Fig. 1). Marten '871 teaches an arrangement that minimizes the switches and amplifier to one apiece, but other arrangements utilizing more switches and amplifiers are clearly possible that output the same results, including the arrangement of claim 5. Forming such permutations in arrangements is a matter of basic circuit logic and design that would be fundamental for one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871 and Marten '850 to produce the device of claim 5.

16. **Claims 6-7 are rejected** as being unpatentable over Marten '871 as applied to claim 1 above, and further in view of U.S. Patent No. 4,961,009 (Baik).

17. Regarding claim 6, Marten '871 teaches a signal processing system according to claim 1. Marten '871 does note teach a current mirror circuit for copying the clicking operation signal. However, Baik does teach a current mirror circuit (Abstract). The current mirror is a well-known circuit design element commonly used for providing steady current and voltage. Therefore, it would have been obvious to one of ordinary skill in the art to apply a current mirror to the teaching of Marten '871 to produce to device of claim 6.

18. Regarding claim 7, Marten '871 and Baik teach the device of claim 6 as explained above. Marten '871 further teaches an amplifier for amplifying the shifting operation signal in the x-axis direction, for amplifying the shifting operation signal in the y-axis direction, for amplifying an output signal of the current-voltage converter, and a switching circuit for switching over between output signals to thereby output the switched signal, and a controller for controlling the switching circuit, wherein the controller executes control of switchover such that the switching circuits output the shifting operation signal in the x-axis direction, the shifting operation signal in the y-axis direction and the clicking operation signal circularly for every predetermined period. Marten '871 does not explicitly teach the use of three amplifiers, one for each signal, wherein switching circuits switch among outputs of the three amplifiers. However, However, Marten '850 does teach the use of amplifiers to amplify axis signals individually (Fig. 1). Marten '871 teaches an arrangement that minimizes the switches and amplifier to one apiece, but other arrangements utilizing more switches and amplifiers are clearly possible that output the same results, including the arrangement of

claim 5. Forming such permutations in arrangements is a matter of basic circuit logic and design that would be fundamental for one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871 and Marten '850 to produce a pointing device signal processing circuit with one amplifier for each signal, and switching circuits to switch among the amplifier outputs under the control of a microcontroller. Neither Marten '871 nor Marten '850 teach a current-voltage converter for converting an output current of the current mirror circuit into a voltage. However, Baik does teach such a current-voltage converter. As explained above, the use of current mirrors to provide constant current or voltage is well-known, and the use of a current-voltage converter would be expected as taught by Baik. Thus, just as the current mirror would be compatible with the teaching of Marten '871, so would that of the converter. Furthermore, Marten '850 merely indicates that different switch and amplifier arrangements are possible, and does not teach against a current mirror or converter. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871, Marten '850, and Baik to produce the device of claim 7.

19. **Claims 6 and 8 are rejected**, claim 6 being rejected in the alternative, as being unpatentable over Marten '871 as applied to claim 1 above, and further in view of Japanese Patent Publication No. 2001-324519 (Mitsuoka).

20. Regarding claim 6, Marten '871 teaches a signal processing system according to claim 1. Marten '871 does note teach a current mirror circuit for copying the clicking operation signal. However, Mitsuoka does teach a current mirror circuit (see [8]). The

current mirror is a well-known circuit design element commonly used for providing steady current and voltage. Therefore, it would have been obvious to one of ordinary skill in the art to apply a current mirror to the teaching of Marten '871 to produce to device of claim 6.

21. Regarding claim 8, Marten '871 and Mitsuoka teach a signal processing system according to claim 6. Marten '871 further teaches an amplifier for amplifying the shifting operation signal in the x-axis direction, for amplifying the shifting operation signal in the y-axis direction (Fig. 1 at 14), a switching circuit for switching over between output signals to thereby output the switched signal (Fig. 1 at 12), and a controller for controlling the switching circuit, wherein the controller executes control of switchover such that the switching circuit outputs the shifting operation signal in the x-axis direction and the shifting operation signal in the y-axis direction alternately for every predetermined period (Fig. 1 at microcontroller). Marten '871 does not explicitly teach a separate operational amplifier for amplifying the y-axis signal, nor plural switching circuits for switching over between the output signals of the first and second amplifiers to thereby output the switched output signal, nor where the controller controls the plural switching circuits to output the first and second amplifiers alternately. However, Marten '850 does teach the use of amplifiers to amplify axis signals individually (Fig. 1). Marten '871 teaches an arrangement that minimizes the switches and amplifier to one apiece, but other arrangements utilizing more switches and amplifiers are clearly possible that output the same results, including the arrangement of claim 3. Forming such variations in arrangements is a matter of basic circuit logic and design that would be fundamental

for one of ordinary skill in the art. Therefore it would have been obvious to one of ordinary skill in the art to be able to combine the teachings of Marten '871 and Marten '850 to produce a pointing device signal processing circuit with one amplifier for each x and y axis signal, and switching circuits to switch among the amplifier outputs under the control of a microcontroller. Neither Marten '871 nor Marten '850 teaches an oscillator undergoing change in oscillation frequency in response to an output current of the current mirror circuit, a frequency measuring circuit for measuring the oscillation frequency of the oscillator. However, Mitsuoka does further teach an oscillator undergoing change in oscillation frequency in response to an output current of the current mirror circuit, a frequency measuring circuit for measuring the oscillation frequency of the oscillator ([8]). As explained above the teaching of Mitsuoka regarding a current mirror is compatible with that of Marten '871, and the modification taught by Marten '850 only regards the arrangement of amplifiers and does not teach away from the current mirror. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Marten '871, Marten '850, and Mitsuoka to produce the device of claim 8.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gene W. Lee whose telephone number is 571-270-7148. The examiner can normally be reached on Monday-Thursday, 9am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GWL/

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629